

Remarks

The Rejection under 35 U.S.C. § 103(a) Over U.S. Patent No. 2,182,397 To Eckey in view of U.S. Patent No. 3,972,962 to Williams et al. Should be Withdrawn

All pending claims (19-42) were rejected under 35 USC § 103(a), as unpatentable over U.S. Patent No. 2,182,397 to Eckey ("Eckey") in view of U.S. Patent No. 3,972,962 to Williams et al ("Williams"). The Examiner acknowledged that "Eckey [published in 1939] teaches as its 'most suitable' esterification catalyst sulfonic [sic] acid and certain aromatic sulfonic acids, none of which suggest the beneficial catalysts of the instant invention" (Office Action, p. 4). The Examiner then reaches forward in time 37 years from Eckey to Williams, published in 1976, in an attempt to remedy that deficiency. She selects a combination of phosphoric acid and alkyl tin oxide from the list of esterification catalysts recited in Williams, which are still not the claimed catalysts of the present invention (phosphorus (I) acid and tin(II) oxide). Therefore, a further (and improper) leap is required to arrive at the catalyst combination of the present invention. If it were so obvious to make the combination that the Examiner is trying to make from these two references, one would have expected someone in the intervening 37 years between the two references to have made it, or even in the 32 years since Williams published. The failure of the prior art to make the *claimed* combination until Applicants' filing is strong evidence that the claimed combination is not obvious.

The Rejection under 35 U.S.C. § 103(a) Over U.S. Patent No. 5,959,130 to Walele et al. in view of Williams Should be Withdrawn

All pending claims (19-42) also were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,959,130 to Walele et al ("Walele") in view of Williams. However, the Examiner acknowledged in the first Office Action, dated July 23, 2007, that "Walele et al is deficient in the sense that it does not use Applicant's tin oxide and phosphorous acid catalyst" (see first Office Action, p. 3). In this case, the Examiner reaches back 23 years before Walele, published in 1999, to Williams, published in 1976, in an attempt to remedy this deficiency. Again, she selects a combination of phosphoric acid and alkyl tin oxide from the list of esterification catalysts recited in Williams, which are still not the claimed catalysts of the present invention (phosphorus (I) acid and tin(II) oxide). Therefore a further (improper) leap is required to arrive at the catalysts of the present invention. The fact that Williams had been available to Walele for so long, and that a combination of these two references still does not produce the claimed combination, even more strongly reinforces the non-obviousness of the present invention.

Both Obviousness Rejections Are Defective for Similar Reasons

That the Examiner in both of her obviousness rejections reaches so far back in time to references published so many years apart, and where the combinations she makes still do not produce the claimed invention, demonstrates that she is using impermissible hindsight to create the claimed combinations.

Further, the Examiner states that “variation would include different oxidation states” (Office Action, p. 4), with regard to the statement in Williams that “the amount and type of esterification catalyst can be widely varied.” The Examiner’s “variation” statement is made without supporting evidence. There is no indication in Williams, or the other cited references, that this is true. For example, the sulfur-based acids listed by Williams (sulfuric acid, p-toluenesulfonic acid, methanesulfonic acid) all have the same oxidation state. Also, only one oxidation state is listed for a phosphorus-based acid (phosphoric acid) catalyst.

Also, the Examiner’s selection from Williams of “alkyl tin oxide” as the tin catalyst still requires a leap to arrive at the tin(II) oxide catalyst claimed in the present invention. Again, the assertion that “it would be prima facie obvious to one of ordinary skill in the art at the time of the invention, to substitute variations of Williams et al.’s...alkyl tin oxide catalyst, for the esterification reaction of Walele et al. and Eckey” (Office Action, p. 4) is made without supporting evidence. A rejection without supporting evidence is improper.

In summary, the Examiner selectively picks a combination of catalysts from the cited references and then requires a change in oxidation state for the phosphorous-based acid (from V to I) as well as elimination of the organic ligand for the tin component (from alkyl tin oxide to tin(II) oxide) to arrive at the claimed combination of the present invention. Such selective picking and choosing, with the additional transformations of what is chosen, is improper hindsight

reconstruction. In other words, picking and choosing elements from the cited art and then modifying and combining them in arbitrary ways is an improper basis for an obviousness rejection.

Finally, Williams recites a variety of esterification catalysts, but does not teach their use in combination. In fact, some of the listed catalysts are not compatible with one another. For example, phosphoric acid and sodium carbonate are reported as effective catalysts, but should certainly not be used in combination, which would result in an acid-base reaction to form sodium phosphate, which common sense suggests would be ineffective as an esterification catalyst. Thus, the present invention's specific combination of tin (II) oxide with a phosphorous (I) acid (e.g. phosphinic or hypophosphorous acid) or salt thereof is not taught by any combination of cited references.

In light of these remarks, we request that the Examiner withdraw the obviousness rejections and allow this case.

Respectfully submitted,

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